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(12) United States Patent Diedering et al.

(54) REPOSITIONING WIRES AND METHODS FOR REPOSITIONING PROSTHETIC HEART VALVE DEVICES WITHIN A HEART CHAMBER AND RELATED SYSTEMS, DEVICES AND METHODS

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(58) Field of Classification Search

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(56) References Cited

U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

International Search Report and Written Opinion, dated Nov. 15, 2019, for PCT Application No. PCT/US2019/050978, filed Sep. 13, 2019.

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(57) ABSTRACT

The invention provides methods, devices and systems for delivering, positioning and/or repositioning an expandable prosthetic heart valve in a patient's heart chamber. At least one non-looped wire and looped wire pair is operatively connected with an expanded prosthetic heart valve that is collapsed within a delivery catheter lumen having its distal end positioned in the subject heart chamber. The collapsed prosthetic heart valve is translated through the delivery catheter lumen to and out of its distal end where the prosthetic heart valve expands to a working configuration. The wire(s) of the non-looped and looped wire pair may be manipulated by pulling proximately or pushing distally to position or reposition the expanded prosthetic stent into position, then released from connection with the positioned stent and withdrawn from the patient.

11 Claims, 2 Drawing Sheets

